Standing Up the Information Operations Range

By Robert P. Sabo

Editorial Abstract: ***Mr. Sabo examines the creation of a realistic information operations test and training environment to meet Department of Defense technology and tactics evaluation requirements. He discusses program background and development, and outlines the path to full spectrum IO support.***

The Information Operations (IO) Range is preparing for its initial set of demonstration events. US Joint Forces Command (USJFCOM) directs this program as Lead Agent, with the Joint National Training Capability (JNTC) as the Lead Agent implementing authority. The IO Range development concept creates an environment composed of processes and structures which establish a realistic test, training, and exercise environment for developing and operationalizing IO capabilities and their associated Tactics, Techniques, and Procedures (TTP). The supporting infrastructure includes distributed, interconnected facilities and instrumentation capable of supporting live employment of IO capability. The IO Range environment represents actual combat targets, systems, and situations, allowing users to conduct technical and performance assurance testing for IO capability system certification. It will support characterization of effects produced by IO capabilities, at a level suitable for Joint Munitions Employment Manual (JMEM)-styled descriptions across tests, training, exercises, and experiments. The same environment also enables effective and thorough service, component, and combatant commander-sponsored training and exercises.

History

The IO Range builds a cooperative confederation of US government information operations capabilities for the mutual benefit of all participants, and the practical operationalization of IO for broad support across multiple Department of Defense (DOD) disciplines. The concept is a product of an IO Range Infrastructure Analysis project, sponsored by the Under Secretary of Defense for Intelligence (USD(I)); the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)); and the Director of Operational Test and Evaluation (DOT&E). In the 18 July 2003 program authorization memorandum, these sponsors jointly state "The Defense Department requires an integrated IO test and evaluation capability to assess IO technologies and tactics in a representative operational environment against realistic targets." The primary stimulus for the IO Range was the fiscal year (FY) 2004 Defense Planning Guidance (DPG) identifying IO as a key investment area.

Several high-level guidance documents and directives provide policy guidance for the IO range vision and practical

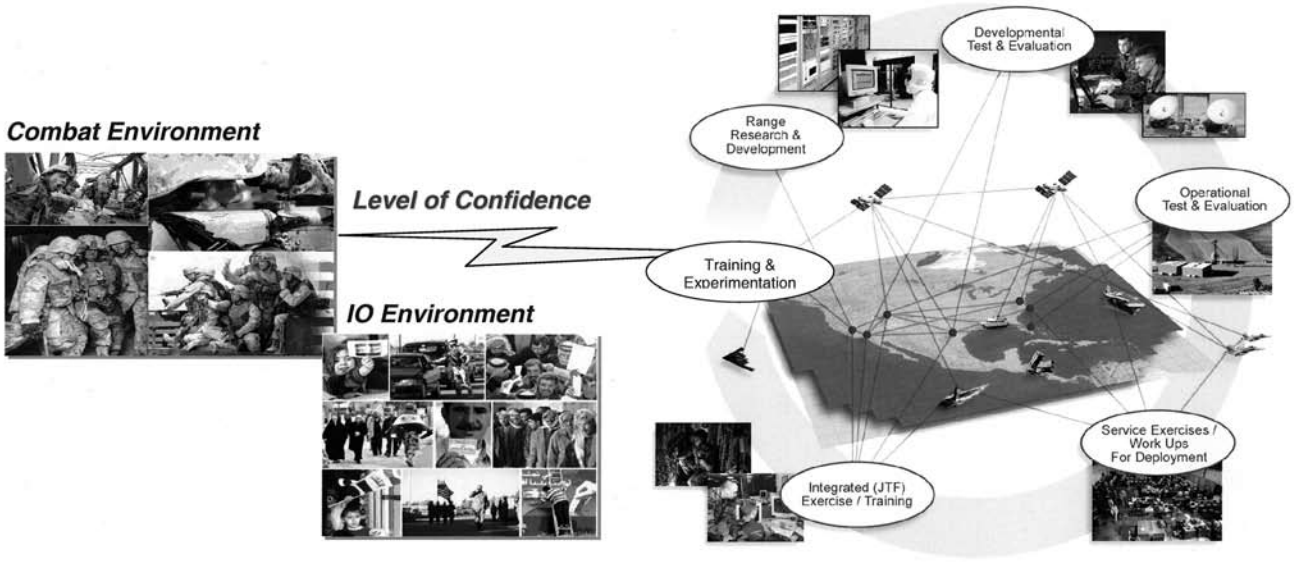

Figure 1. The IO Range will increase the commander's confidence in non-kinetic and other IO capabilities. (USJFCOM)

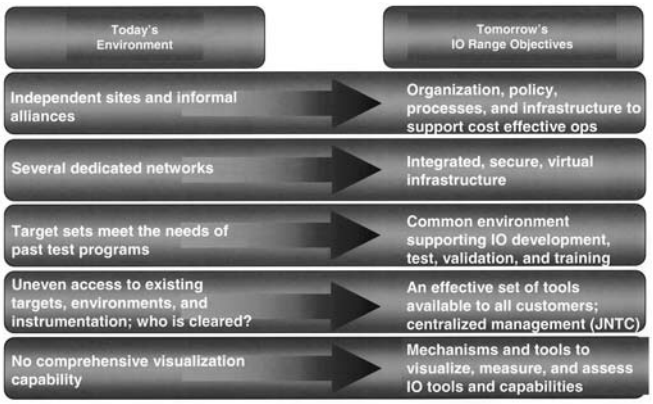

Figure 2. How the IO Range will change the test and evaluation as well as the exercise and training of IO capabilities. (USJFCOM)

implementation. For example, the *National Military Strategy of the United States* stresses the importance of integrating IO capabilities for the success of joint operations and decision superiority. Also, the *2001 Quadrennial Defense Review* identifies six critical operational goals in the DOD's transformation efforts. "Assuring information systems in the face of attack and conducting effective Information Operations" was just one of these goals. In addition, the DOD *IO Roadmap*, signed on October 30, 2003, explicitly identified DOD's need for the IO Range. The FY04-09 DPG stated the need to expand IO training and education for the developing cadre of IO professionals, and provide an environment for analysis, testing, training, combat assessments, and measures of effectiveness for more reliable IO capabilities. Finally, a 18 November 2005 Deputy Secretary of Defense Memorandum firmly establishes the requirement for creating a cooperative information operations range among military services, under Joint Forces Command leadership.

Mission and Objectives

The IO Range mission is to create a secure, flexible, seamless environment enabling Combatant Commanders (COCOMs) to visualize non-kinetic weapons effects, thus achieving the same confidence and expertise in employing IO capabilities as with kinetic weapons. The IO Range will facilitate this by providing an environment that integrates specific IO development, testing, training, exercise—plus experimentation capabilities and resources—to meet growing service, component, and COCOM needs.

The IO Range program objects are:

• Provide a persistent integrated infrastructure using DOD, DOE, and national resources that enables rapid formation of logical ranges to support IO events

• Provide a secure environment for events conducted concurrently at the collateral through special access security classifications

• Provide a realistic (e.g., high fidelity combat and adversary) environment for demonstrations, analyses, testing (DT&E and OT&E), training and exercise of IO capabilities

• Provide instrumentation to fully measure the IO battle space to support weapon system assessments, certification, characterization, and operationalization

• Support effects-based capabilities assessments

• Support interfaces to external warfighting and intelligence resources.

IO Range Activities

The IO Range will support a dynamic set of mission activities. Supported activities cross the spectrum from early technology assessments and experiments, through developmental and operational testing, service training, and joint exercises. Results of each activity will build upon prior events, to identify, develop, and characterize IO capabilities and tactics. This will build the confidence of operational units and their commanders in IO capability usage and expected effects. In some of these operations, the IO Range will only partially support an effects-based weapons system assessment. To accomplish these tasks, the range should support the following customer mission areas and activities separately or simultaneously:

• Basic and advanced research and development (R&D)
• Experimentation
• Modeling and simulation (M&S)
• Developmental test and evaluation (DT&E)
• Operational test and evaluation (OT&E)
• Exercises
• Training certification
• Studies and analyses
• Battle lab demonstrations, Advanced Concept Technology Demonstrations (ACTDs), Advanced Technology Demonstrations (ATDs), and other experiments
• Targeting and battle damage assessment (BDA) development
• Assessments of unintentional weapon effects
• Tactics, Techniques, and Procedures (TTP) development
• Rules of engagement (ROE) approvals and authorities
• Legal reviews and assessments
• Tool and weapon system operations
• Joint Munitions Effectiveness Manual (JMEM) validation
• Proof of concept demonstration
• Weapon/capability performance characterization
• Mission rehearsal

Range Organization and Structure

In essence, the IO Range operational concept links ten initial sites to create a new, transformational capability. As lead Agent, USJFCOM combines and enhances existing service, agency, and Department of Energy (DOE) range capabilities, thus creating new capabilities where they did not previously exist. Member sites will retain ownership and control of their range assets, but will allow them to be linked to the others. This will provide joint and service warfighters a robust, realistic

environment for training, tactics development, and exercising of computer network attack and selected offensive electronic warfare capabilities. This capability will expand to include other IO disciplines as the IO Range progresses toward its final operational capability.

The IO Range will have persistent and transactional components. The persistent component, as described above, will permanently link member assets into an integrated IO Range complex. Users will be able to access any of the range capabilities without additional network connections. Conversely, transactional components will only be connected to the integrated range complex for specific tests or training/exercise events requiring these unique capabilities

The IO Range's functional structure is based on integration of existing ranges, laboratories, information warfare centers, and other government facilities currently supporting IO test, training, exercise, and experimentation events. Capabilities at selected sites will be securely connected and integrated into the greater range. A key feature of this concept is a persistent, secure connection allowing data exchange and effects visualization as capabilities are employed. Creation of this "virtual range" will significantly reduce the amount of lead-time required to set up each new test or event. IO Range Memoranda of Agreements (MOA) will detail what each range provides, and how users may utilize various capabilities. The MOAs will be bilateral agreements between individual range sites and the Lead Agent, or a delegated execution authority such as the Joint Warfighting Center, Joint Management Office, or IO Range Program Manager.

Leads will establish advisory groups, ranging from a two/three-star-level Senior Advisory Group to action-officer-level working group, to ensure protection of member site's equities. These groups will arbitrate any issues arising between member sites and the IO Range, and provide oversight and guidance from the users and member sites.

These are the advisory and their roles:

• The Senior Advisory Group (SAG) is a two-star-level steering group chaired by the USJFCOM J7/Joint Warfighting Center Commander. This group will meet periodically to approve IO Range priorities, arbitrate issues unresolved by the IO Range Joint Integrated Product Team (JIPT), approve range budgets and POM inputs, validate range requirements, and provide senior guidance and direction to the IO Range.

• The IO Range Joint Integrated Product Team (JIPT) is an O-6 level group chaired by the IO Range Program Manager. It meets periodically to resolve member site issues and concerns, and to review and approve IO Range schedules and priorities. It will interact with the IO Range Operations Center's Range Management Group. Membership includes the parent organizations for each of the member sites as well as representation from USSTRATCOM, Office of the Secretary of Defense (OSD), and other stakeholders as required. The IO Range JIPT has two subordinate working groups: the Requirements Working Group; and the Technical Working Group.

• The Requirements Working Group (RWG) and the Technical Working Group (TWG) are action-officer-level working groups that meet regularly to define requirements, refine IO Range operating procedures and processes, review user requests, and work technical issues related to IO Range operation.

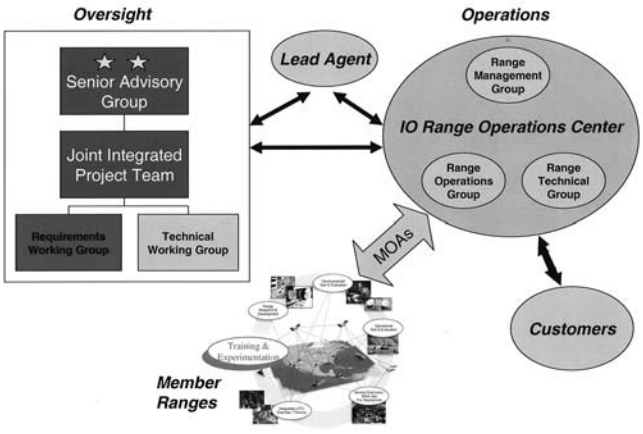

Figure 3. The IO Range will be responsible to oversight/advisory boards, the Lead Agent, and its customers while coordinating member sites' capabilities. (USJFCOM)

Initial Capability (IC) Demonstrations

The IO Range has completed the requirements for Initial Capability (IC). USD(I) provided USJFCOM the IC definition as IO Range primary sponsor. The main emphasis of the definition is to establish connectivity between the member sites, along with the ability to securely pass information through a basic visualization capability—with appropriate control mechanisms in place—for network operations. IC definition specifics include:

• Physical connection between all 10 sites at the Unclassified, Secret, and Top Secret levels

• Ability to exchange data between all sites

• At a minimum, T1 capacity between all sites

• Ability to set up specific connections at specific classification levels

• Basic visualization capability for a Computer Network Attack (CNA) event

• Commanders and test operator can look at their respective displays and see the effect and that it was the correct effect

• Control mechanisms in place and functional (processes, policies, and infrastructure)

• Scheduling, prioritization, reconfiguration of range processes

• MOUs/MOAs set up to have access to specific assets (instrumentation, targets, access) at specific ranges

• Physical connections with security devices, instrumentation, and visualization in place

IC may also include the following defined objectives:

• Concepts, architectures, and standards completed/approved

• Initial policies and processes codified, approved, and implemented

• Proponency, facilitation, coordination structures in place

• Coordination/liaison organizations functioning with sufficient manning

Evolution to Full Capability (FC)

The full capabilities of the IO Range are not as well defined as the initial capabilities. In coordination with the primary stakeholders and members, the Lead Agent is still refining the definition for FC. However, at the very basic level it will involve the integration of approximately 10 more member sites by FY11. USJFCOM has not yet determined specifics regarding network capabilities/expansion, visualization, instrumentation, and or standards, to name a few.

The Challenge of Defining the Path to a Full Spectrum IO Range

Current guidance describes the IO Range objective as the path to full spectrum IO capability. Briefly, logical developments of that roadmap are:

• FY 07 – A computer network defense (CND) study is planned as the next evolutionary step to full spectrum IO training. 10 additional IO Range persistent sites will be planned for integration into the IO Range.

• FY 08 – IO Range will add 10 persistent sites. CND is integrated into the IO Range. Operations Security (OPSEC) for telecommunications and Voice Over Internet Protocol (VOIP) requirements will be developed and exercised. Expanded range accesses will be developed.

• FY 09 – Evolutionary development toward full spectrum IO will continue with the addition of offensive electronic warfare (EW).

• FY 10 – Evolutionary development will continue and will address Space capabilities. Twenty persistent IO Range sites will be connected and integrated for IO Range use.

• FY 11 – Full capability achieved, as currently envisioned. The IO Range will deliver a robust test and training environment. Full spectrum IO training will continue with integration of PSYOP capability integrated and Military Deception capabilities planned for FY 12.

Conclusion

The IO Range will be conducting events demonstrating its ability to achieve initial capability throughout 2006. These demonstrations are structured to ensure customers can effectively use the Range's security and capabilities in the near future. The challenge is heightened by the range of its prospective customer's requirements—services, COCOMs, and other government agencies. The salient questions therefore revolve around the following three Critical Operational Issues (COIs):

• Does the IO Range provide a persistent, secure, and realistic environment that supports test & evaluation, training, exercises, and experimentation of CNA and integrated EW/CNA weapons, tactics, techniques and procedures?

• Do IO Range processes and procedures support efficient and effective operation of the range at all levels of management and security?

• Can the IO Range support effects-based evaluations of CNA tools?

The IO Range will be fully engaged with IO testing, evaluation, training, and exercises in 2007. With its evolution to full-spectrum IO capability, it should transform the status of IO from a powerful force multiplier to a transparent operational capability for joint, Air, Land, Maritime, and Special Operations forces.

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